Defense Information Infrastructure (DII)

Common Operating Environment (COE)

Installation Procedures (IP) for
Developer's Toolkit Version 3.2.0.2 (Solaris 2.5.1)

Document Version 1.0

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1. Scope

1.1 Identification

This document describes how to install the Defense Information Infrastructure (DII) Common Operating Environment (COE) Developer's Toolkit Version 3.2.0.2 (Solaris 2.5.1). The DII COE Developer's Toolkit Version 3.2.0.2 (Solaris 2.5.1) is intended to be used on Sun hardware running the Solaris 2.5.1 Operating System.

The DII COE Kernel is a Government off-the-shelf (GOTS) package that includes the GOTS described in Section 1.2, *System Overview.*

> **NOTE**: Throughout this document, `Courier` font is used to indicate entries to be typed at the keyboard, UNIX commands, file and directory names, and screen text. For example:
>
> The file is located in the `DII_DEV` directory.

1.2 System Overview

DII COE developer's tools were developed to aid the developer in the creation and ultimate installation of DII COE segments. The tools make software integration a largely automated process, thus significantly reducing development time while automatically allowing detection of potential integration and runtime problem areas.

By default, developer's tools are located underneath the `DII_DEV` directory and are distributed as part of the Developer's Toolkit. The actual location of the Developer's Toolkit may vary from system to system because it is installed by means of a `tar` command. For example, if the toolkit is tarred to `/h`, the path would be `/h/DII_DEV`.

This delivery consists of the following items:

C 11 developer tools (CalcSpace, CanInstall, ConfigDef, ConvertSeg, MakeAttribs, MakeInstall, TestInstall, TestRemove, TimeStamp, VerifySeg, and VerUpdate)

C `include` files, located in the `include` directory

C public Application Programmer Interface (API) libraries, located in the `libs` directory

C a data file called `TapeSizes`, located in the `data` directory, which contains a list of known tape devices

C an environment setup script called `MakeTOOLSEnv`, located in the `Scripts` directory
C public API examples, located in the `examples` directory; and (10) sample segments, located in the `SampleSegments` directory.

Developer's Tools

The developer's tools can be run from the command line, and some can be run from other code using published APIs. The following tools are included in the DII COE Developer's Toolkit Version 3.2.0.2 delivery. The *DII COE Programmer's Manual* describes these tools and their functionality in more detail.

C **CalcSpace** Version 1.0.0.6—Computes the space required for the segment specified and updates the hardware descriptor.

C **CanInstall** Version 1.0.0.9—Tests a segment to see if it can be installed, which means that all required segments must already be on the disk, and the disk cannot have any conflicting segments.

C **ConfigDef** Version 1.0.0.1—Creates a distribution definition from a list of segments.

C **ConvertSeg** Version 1.0.0.9—Examines a segment's segment descriptors and converts them to the *DII COE Integration and Runtime Specification* segment format. Refer to the *DII COE Integration and Runtime Specification Version 2.0* for more information about the DII COE segment format.

C **MakeAttribs** Version 1.0.0.9—Creates the descriptor file `FileAttribs`, which recursively traverses every subdirectory beneath the segment home directory and creates a file with lines in the proper format.

C **MakeInstall** Version 1.0.1.9—Writes one or more segments to an installation medium or packages the segments for distribution over the network.

C **TestInstall** Version 1.0.0.11—Installs a segment (temporarily) that already resides on disk.

C **TestRemove** Version 1.0.0.10—Removes a segment that was installed by TestInstall.

C **TimeStamp** Version 1.0.0.8—Puts the current time and date into the `VERSION` descriptor of the specified segment.

C **VerifySeg** Version 1.0.0.12—Validates that a segment conforms to the rules for defining a segment.

C **VerUpdate** Version 1.0.1.7—Increments the segment version number and updates the date and time in the `VERSION` descriptor of the specified segment.

`include` Directory

Public `include` files are used to compile with the public APIs. Public `include` files are located in the `DII_DEV/include` directory.

`libs` Directory

Public API libraries are located in the `DII_DEV/libs` directory.

`TapeSizes` Data File

The `TapeSizes` data file is located in the `DII_DEV/data` directory. The data file contains a list of known tape devices. This is used as a convenience feature with the MakeInstall tool.

> **NOTE**: The environment variable `TOOLS_DATA` must be set and pointing to `DII_DEV/data` to allow MakeInstall to access this file.

`MakeTOOLSEnv` Setup Script

The `MakeTOOLSEnv` setup script is located in the `DII_DEV/Scripts` directory. The script defines the environment variables required for developer's tools processing.

`examples` Directory

The `examples` directory contains a list of example C programming files that show developers how to use the public APIs. The required public `include` files are also shown. Examples are located in the `DII_DEV/examples` directory.

To receive immediate assistance with a problem or to report a problem, call the DII COE Hotline at (703) 735-8681 (DSN 653-8681) between the hours of 9:00 a.m. and 5:00 p.m. Eastern Standard Time. You can also send a facsimile to (703) 735-3080 (DSN 653-3080), send an e-mail message to hotlinec@ncr.disa.mil, or look on the DII COE Hotline Web site at the following URL: http://spider.osfl.disa.mil/dii/hotline/index.html. The DII COE Hotline is located at the Operational Support Facility (OSF) in Sterling, Virginia.

If a problem cannot be corrected, follow these guidelines to report it:

STEP 1:   **Make sure the problem can be repeated**.

STEP 2:   **Record pertinent information**. Record the problem, the last steps leading to the problem, and the frequency with which the problem occurs.

STEP 3:   **Describe attempts to solve the problem**.

2. Referenced Documents

The following documents are referenced in this installation guide:

C DII.3200.Sol251.P1.PM-1, *Defense Information Infrastructure (DII) Common Operating Environment (COE) Programmer's Manual for Kernel Version 3.2.0.0 Patch 1 and Developer's Toolkit Version 3.2.0.1 (Solaris 2.5.1)*, September 26, 1997

C DII COE I&RTS:Rev 2.0, *Defense Information Infrastructure (DII) Common Operating Environment (COE) Integration and Runtime Specification Version 2.0*, October 23, 1995

C DII COE I&RTS:Rev 3.0, *Defense Information Infrastructure (DII) Common Operating Environment (COE) Integration and Runtime Specification Version 3.0*, July 1997

C DII.3200.Sol251.Kernel.IG-1, *Defense Information Infrastructure (DII) Common Operating Environment (COE) Version 3.2.0.0 Kernel Installation Guide (Solaris 2.5.1)*, July 25, 1997

C DII.3200.Sol251.DTK.3202.SVD-1, *Defense Information Infrastructure (DII) Common Operating Environment (COE) Software Version Description for Developer's Toolkit Version 3.2.0.2 (Solaris 2.5.1)*, November 18, 1997

C *SPARC®: Installing Solaris Software,* Sun Microsystems, Incorporated, Mountain View, CA, November 1995

C *Software and AnswerBook® Installation Guide,* Sun Microsystems, Incorporated, Mountain View, CA, November 1995

C TED00200004000, *TriTeal Enterprise Desktop (TED™) Version 4.0 User's Guide,* TriTeal Corporation, Carlsbad, CA, August 1995.

3. System Environment

This section describes the system requirements and the system and site preparation.

3.1 System Requirements

This section describes hardware, operating system, and kernel requirements for the DII COE Developer's Toolkit Version 3.2.0.2.

3.1.1   Hardware Requirements

The following hardware components are required for the DII COE Developer's Toolkit Version 3.2.0.2:

C   4 megabytes (MB) disk space

C   8 millimeter (mm) tape drive.

3.1.2   Operating System Requirements

The DII COE Developer's Toolkit Version 3.2.0.2 requires the Solaris 2.5.1 Operating System.

3.1.3   Kernel Requirements

The DII COE Developer's Toolkit Version 3.2.0.2 (Solaris 2.5.1) requires the DII COE Kernel Version 3.2.0.0 (Solaris 2.5.1). The DII COE Kernel is a suite of applications layered on top of the Solaris 2.5.1 Operating System.

3.2   System and Site Preparations

This section describes the system configuration, operating system preparation, and the tape/disk preparation.

You must answer the following questions before you install the DII COE Developer's Toolkit. Your system administrator should provide you with the appropriate answers.

1.   Does the system have an internal tape drive? If so, what is the tape device number?

2.   Is an external tape drive attached to the system? If so, what is the tape device number?

3.2.1   System Configuration

The DII COE Developer's Toolkit Version 3.2.0.2 (Solaris 2.5.1) tape is a relative tar and must be installed after the Solaris 2.5.1 Operating System and the DII COE Version 3.2.0.0 Kernel. Refer to the *DII COE Kernel Installation Guide (Solaris 2.5.1)* for instructions on installing the Solaris 2.5.1 Operating System and the DII COE Kernel.

3.2.2   Operating System Preparation

Information needed to prepare the operating system is described in the following documents:

C   *SPARC®: Installing Solaris Software,* Sun Microsystems, Incorporated, Mountain View, CA, November 1995

C   *Software and AnswerBook® Installation Guide,* Sun Microsystems, Incorporated, Mountain View, CA, November 1995.

3.2.3   Tape/Disk Preparation

To install the Developer's Toolkit, Version 3.2.0.2 (Solaris 2.5.1), you need one 8mm tape consisting of a relative tar of the Developer's Toolkit, Version 3.2.0.2 (Solaris 2.5.1). Ensure that the disk has enough space to install the Developer's Toolkit Version 3.2.0.2, which is 4 MB.

4.   Installation Instructions

This section describes the media booting procedures, the installation procedures, installation of upgrades, installation verification, initializing software, list of changes and enhancements, and important considerations.

4.1   Media Booting Procedures

Not applicable.

4.2   Installation Procedures

Follow the steps below to install the DII COE Developer's Toolkit.

NOTE: By default, the Developer's Toolkit is located under the `DII_DEV` directory. However, developers may install the Developer's Toolkit on the disk in any directory they desire. For example, if the toolkit is tarred to `/h`, the path would be `/h/DII_DEV`.

NOTE: Installing the Developer's Toolkit takes 2-3 minutes.

STEP 1:   **Log in as `root`**. Type `root` at the name prompt and press [RETURN].

STEP 2:   **Enter the `root` password**. Type the `root` password at the password prompt and press [RETURN]. The Common Desktop Environment (CDE) Front Panel appears at the bottom of the screen. For additional information about the CDE, see the *TriTeal Enterprise Desktop User's Guide*.

STEP 3:   **Open a terminal emulator window**. Click on the Text Editor—Personal Applications control subpanel and then click on the Terminal control. A terminal emulator window appears.

STEP 4:   **Move to the directory where you want to install the Developer's Toolkit**. Type the following command at the prompt to move to the `/h` directory or to another directory of your choice:

```
                    cd [directory of your choice][RETURN]
```

STEP 5: **Install the Developer's Toolkit**. Type the following command if the tape drive is attached to the system, where X is the tape drive number:

```
          tar xvf /dev/rmt/Xmn [RETURN]
```

Type the following command if the tape drive is attached to another system, where Y is the remote host's IP address, and X is the tape drive number:

```
          rsh Y dd if=/dev/rmt/Xmn bs=20b | tar xvfB - [RETURN]
```

The Developer's Toolkit installs at this time, and the installation process is then complete.

4.3   Installation of Upgrades

Not applicable.

4.4   Installation Verification

To verify the installation of the Developer's Toolkit, reboot your system and log in as root. After the tar command is performed, all of the components of the Developer's Toolkit will reside in the DII_DEV directory. The Developer's Toolkit components are listed below:

executables	DII_DEV/bin
public header files	DII_DEV/include
public libraries	DII_DEV/libs
data files	DII_DEV/data
manual pages	DII_DEV/man
scripts	DII_DEV/Scripts
examples	DII_DEV/examples
sample segments	DII_DEV/SampleSegments

Figure 1. Developer's Toolkit Components

4.5   Initializing the Software

Developers should include `DII_DEV/bin` in the path environment variable for their development environment. The `DII_DEV/man` directory should also be included in the search path for UNIX manual pages. Developers must source the `MakeTOOLSEnv` setup script. This will set up the following four environment variables: `MACHINE`, `MACHINE_CPU`, `MACHINE_OS`, and `TOOLS_HOME`. Read the `README` file at the top level of the `DII_DEV` directory for more information about these environment variables.

Developers are encouraged to submit tools to the COE community for inclusion in the Developer's Toolkit. All tools submitted must be license and royalty free and must include a manual page for on-line documentation. Developers who want to release source code for their contributed tools may do so, and the source code for each tool will be organized under the `DII_DEV/src` directory.

Refer to Section 9, *Development Environment*, of the *DII COE Integration and Runtime Specification* for a more detailed explanation of the development environment.

4.6   List of Changes and Enhancements

For a list of changes and enhancements made to the Developer's Toolkit Version 3.2.0.2, see the *DII COE Software Version Description for Developer's Toolkit Version 3.2.0.2*.

4.7   Important Considerations

5.   Notes

The following acronyms and abbreviations are used in this document:

API   Application Programmer Interface

CDE   Common Desktop Environment

COE   Common Operating Environment

DII   Defense Information Infrastructure

DoD   Department of Defense

GOTS   Government off-the-shelf

INRI   Inter-National Research Institute

IP   Installation Procedures

MB   Megabytes

mm   Millimeter

OSF   Operations Support Facility

SVD   Software Version Description

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